

SILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, Colorado 80537-0599

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Lewis R. Dove, et al.

Serial No.: 10/762,143

Examiner: Benny T. Lee

Filing Date: January 20, 2004

Group Art Unit: 2817

Title: QUASI-COAX TRANSMISSION LINES

COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on December 15, 2006.

The fee for filing this Appeal Brief was paid in a Appeal Brief previously filed on April 28, 2006.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

<input type="checkbox"/>	one month	\$ 120.00
<input type="checkbox"/>	two months	\$ 450.00
<input type="checkbox"/>	three months	\$1020.00
<input type="checkbox"/>	four months	\$1590.00

☐ The extension fee has already been filled in this application.

☒ (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **50-1078** the sum of \$0.00. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **50-1078** pursuant to 37 CFR 1.25.

A duplicate copy of this transmittal letter is enclosed.

Respectfully submitted,

Lewis R. Dove, et al.

By

*James A. Sheridan*

James A. Sheridan  
Attorney/Agent for Applicant(s)

☒ I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date of Deposit: December 15, 2006 OR

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Signature: *Chasity C. Rescum*

Reg. No. 43,114

Date: December 15, 2006

Telephone No. (303) 295-8000



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appl. No. : 10/762,143 Confirmation No. 4168  
Appellant : Lewis R. Dove, et al.  
Filed : January 20, 2004  
TC/A.U. : 2817  
Examiner : Benny T. Lee  
  
Docket No. : 10020701-1

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF**

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF**

This Appeal Brief is submitted in response to the Final Office Action  
mailed October 18, 2006.

Appellant filed a Notice of Appeal on December 15, 2006.

### **Real Party in Interest**

The real party in interest is Agilent Technologies, Inc., assignee of the above captioned patent application. Agilent Technologies, Inc. is a Delaware Corporation having its principal place of business in Palo Alto, California.

## **Related Appeals and Interferences**

There are no related appeals and/or interferences.

## **Status of Claims**

Claims 1-20 are pending in this application. Claims 1-3, 5, 7, 10-12, 15, 16, 18 and 19 currently stand rejected. Claims 4, 6, 8, 13, 14, 17 and 20 stand objected to as being dependent on other rejected claims but are otherwise allowable. The rejections of claims 1-3, 5, 7, 10-12, 15, 16, 18 and 19 are appealed.

A copy of the claims is attached as a Claims Appendix to this Appeal Brief.

## **Status of Amendments**

No amendments were filed or entered subsequent to the final Office Action mailed on October 18, 2006.

## **Summary of Claimed Subject Matter**

The invention is variously embodied. Independent claims 1 and 15 are summarized below.

In claim 1, apparatus (FIGS. 2-4 and 8; 200, 202; p. 4, lines 9-12; p. 6, lines 1-5) comprises a layer of dielectric (FIGS. 2-4 and 8; 208; p. 4, lines 13-17); a plurality of conductors (FIGS. 2-4 and 8; 204, 206; p. 4, lines 13-15); a plurality of dielectric mounds (FIGS. 2-4 and 8; 210, 212; p. 4, lines 13-17; p. 5, line 23 – page 6, line 9), wherein each of the conductors (FIGS. 2-4 and 8; 204, 206; p. 4, lines 13-15) is encapsulated between the layer of dielectric (FIGS. 2-4 and 8; 208; p. 4, lines 13-17) and a corresponding one of the dielectric mounds (FIGS. 2-4 and 8; 210, 212; p. 4, lines 13-17; p. 5, line 23 – page 6, line 9); and a first ground shield (FIGS. 2-4 and 8; 214; page 4, line 21-22) positioned below the layer of dielectric (FIGS. 2-4 and 8; 208; p. 4, lines 13-17), and a second ground shield (FIGS. 2-4 and 8; 216; p. 4, lines 22-24) positioned above the dielectric mounds (FIGS. 2-4 and 8; 210, 212; p. 4, lines 13-17; p. 5, line 23 – page 6, line 9).

In claim 15, a method (FIG.9; 900; p. 6, line 22 – p. 7, line 3) for forming transmission lines comprises depositing (FIG.9; 902; p. 6, lines 23-25) a plurality of conductors on a layer of dielectric that is positioned above a first ground shield; depositing (FIG.9; 904; p. 6, line 25 – p. 7, line 1) a respective mound of dielectric over each conductor; and depositing (FIG.9; 906; p. 7, lines 1-3) a second ground shield over the mounds of dielectric.

### **Grounds of rejection to be reviewed on appeal**

1. Whether claims 1-3, 5, 7, 9, 12, 15, 16 and 18 should be rejected under 35 USC 102(b) as being anticipated by Ishikawa (U.S. Patent No. 5,652,557; hereinafter "Ishikawa").
2. Whether claims 10, 11 and 19 should be rejected under 35 USC 103(a) as being unpatentable over the above rejection applied to claims 1 and 15, respectively above, and further in view of Dove et al. (U.S. Patent No. 6,457,979; hereinafter "Dove").

## Argument

1. **Whether claims 1-3, 5, 7, 9, 12, 15, 16 and 18 should be rejected under 35 USC 102(b) as being anticipated by Ishikawa (U.S. Patent No. 5,652,557; hereinafter “Ishikawa”).**

### Claim 1

Claim 1 as originally filed calls for apparatus comprising **a layer of dielectric**; a plurality of conductors; a plurality of dielectric mounds, wherein ***each of the conductors is encapsulated between the layer of dielectric and a corresponding one of the dielectric mounds***; and a first ground shield positioned below the layer of dielectric, and a second ground shield positioned above the dielectric mounds. (Emphasis added.)

As described in the specification and illustrated in the drawings as originally filed, “FIGS. 2 & 3 illustrate a plurality of quasi-coax transmission lines 200, 202 formed in accordance with the methods disclosed herein.” (See, paragraph [0017], lines 9 and 10, on page 4 of the specification.) “Referring to FIG. 3, it can be seen that a plurality of (i.e., two or more) conductors 204, 206 are encapsulated between a layer of dielectric 208 and a corresponding one of the dielectric mounds 210, 212. That is, ***each of the conductors 204, 206 is encapsulated between the layer of dielectric 208 and a corresponding one of the dielectric mounds 210, 212.***” (Emphasis added, and see, paragraph [0018], lines 13-17, on page 4 of the specification.)

The term “layer” is commonly defined as “A usually horizontal deposit or expanse; a stratum” (see, The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2004, 2000 by Houghton Mifflin Company.) The term “encapsulate” is commonly defined as “to surround, encase, or protect in or as if in a capsule” (see, Webster’s Third new International Dictionary, Unabridged, © 1993, by Merriam-Webster, Incorporated). As such, the claimed invention, which is also described in the specification, and illustrated in FIGS. 2-4 and 8, calls for an apparatus having each of the conductors

encapsulated between a layer of dielectric (i.e., a deposit or expanse) and a corresponding one of the dielectric mounds.

The Examiner states:

The Ishikawa reference discloses that the microstrip conductor (3) is indeed "encapsulated" between the substrate layer (1) and the dielectric "mound" (e.g. 6). While it is acknowledged that a metallization film (4) and a dielectric (5) disposed in a groove are also interposed between the conductive microstrip (3) and the substrate layer (1), the presence of these features does not negate the fact that the microstrip conductor (3) would still have been considered to have been "encapsulated" by the "mound" (e.g. 6) relative to the dielectric substrate (1). In other words, even if there are intervening features between the microstrip conductor (3) and the dielectric substrate (1), the microstrip conductor (3) would have none the less been considered to have been "encapsulated" with respect to dielectric substrate (1) through the dielectric "mound" (6), the dielectric (5) in the groove and the metallization film (4), by one of ordinary skill in the art. It would be noted that if it is applicants' intent to infer that the conductor is to be --directly-- encapsulated between dielectric "mound" and the "layer of dielectric" (i.e., without any intervening features), such an interpretation would not have been supported by the presently claimed invention. In other words, the claimed invention does not exclude encapsulation without intervening features, and as such the Ishikawa reference, as set forth in the above rejection, would have met the claimed invention.

Final Office Action of October 18, 2006, pages 4 and 5.

Applicants disagree. Ishikawa does not disclose a layer of dielectric, and each of the conductors encapsulated between the layer of dielectric and a corresponding one of the dielectric mounds. Ishikawa discloses a dielectric substrate (1) having a grounded conductor (2) formed on the rear surface of the substrate (1). Ishikawa further discloses a microstrip conductor line (3) formed on the front surface of the substrate (1). However, microstrip (3) is formed on dielectric (5) formed in the groove surrounded by first metallization (4). As shown in FIG. 11, a second dielectric (6) is formed on and makes contact with the first burying dielectric (5) and microstrip conductor line (3). In other words, Ishikawa discloses a plurality of microstrip conductor lines (3) encapsulated between a plurality of second dielectric layers (6) and a plurality of individual dielectric regions (5) in which the plurality of individual dielectric regions (5) are each

separated from dielectric substrate (1) by first metallization film (4) on the surface of the grooves therein. As the term encapsulate commonly means to surround, encase, or protect in, the plurality of second dielectric layers (6) and the substrate (1) do not encapsulate each one of the plurality of microstrip conductor lines (3). Rather, Ishikawa discloses, at best, substrate (1) and dielectric (6) together with intervening features of dielectric film (5) and metallization (4) around the microstrip conductor (3). However, as indicated in previous responses and in the application as originally filed, the claimed invention calls for each of the conductors encapsulated between a layer of dielectric and a corresponding one of the dielectric mounds. Ishikawa does not disclose this limitation inasmuch as the conduct lines are not each encapsulated between a layer of dielectric and a corresponding one of the dielectric mounds. Applicants assert that the Examiner's interpretation of the term surrounding is incorrect with respect to the application as filed and common dictionary definition as provided herein above.

Furthermore, Applicants assert that Ishikawa teaches away from the present invention as each of the conductors is **encapsulated** between separate ones of dielectric film (5) and dielectric (6).

Accordingly, claim 1 is believed to be allowable.

#### Claims 2, 3, 5, 7, 9 and 12

Claims 2, 3, 5, 7, 9 and 12 each depend either directly or ultimately from independent claim 1 and are believed to be allowable for at least the above-identified reasons.

#### Claim 15

Claim 15 as originally filed calls for a method for forming transmission lines, comprising **depositing a plurality of conductors on a layer of dielectric** that is positioned above a first ground shield; depositing a respective mound of dielectric over each conductor; and depositing a second ground shield over the mounds of dielectric. (Emphasis added.)

The Examiner states:

...with respect to the rejection of claim 15, note that Ishikawa discloses that the plurality of conductors (i.e. microstrip conductors 3) would indeed have been considered deposited on the layer of dielectric (i.e. substrate 1), despite the presence of intervening dielectric (5) in the groove and metallization film (4). In other words, even with presence of intervening dielectric (5) in the groove and metallization film (4), the microstrip conductor (3) would none the less been considered to have been "deposited" on the dielectric substrate (1), within the broadest reasonable interpretation, especially since the dielectric substrate (1) would have provided support for the microstrip conductors (3), as well as support for the intervening features (4, 5), which would have been deposited onto the surface of the dielectric substrate (1). Again, if it is applicants' intent to infer that the deposition of the conductor is to be -- directly-- onto the surface of the dielectric layer, without any intervening features, such a limiting interpretation is not present from the presently claimed invention.

Final Office Action of October 18, 2006, page 4. (Underlining added.)

As discussed above, and as described in the specification, and illustrated in FIGS. 2-4 and 8, the claimed invention calls for a method for forming transmission lines including depositing a plurality of conductors on a layer of dielectric (i.e., a deposit or expanse).

Applicants disagree. Ishikawa discloses forming dielectric (5) in a groove, forming a microstrip conductor line (3) on dielectric (5), and forming a second dielectric (6) on and in contact with the first burying dielectric (5). In other words, Ishikawa discloses depositing a plurality of microstrip conductor lines (3) on a plurality of individual dielectric regions (5) in which the plurality of individual dielectric regions (5) are each separated from dielectric substrate (1) by first metallization film (4) on the surface of the grooves therein. As such, Ishikawa does not disclose, and in fact teaches away from, a method for forming transmission lines including depositing a plurality of conductors ***on a layer of dielectric***.

Applicants disagree with the Examiner's interpretation of the claim, and assert that depositing a plurality of conductors onto intervening dielectric (5) on metallization film (4) on substrate (1) is not depositing a plurality of conductors on

a layer of dielectric. Applicants assert that in the presently claimed invention, and as shown and described in the specification as originally filed, depositing a plurality of conductors on a layer of dielectric means that each conductor is deposited on, or placed on, the layer of dielectric, and cannot be construed as including intervening materials. Accordingly, claim 15 is believed to be allowable.

Claims 16 and 18

Claims 16 and 18 each depend either directly or ultimately from independent claim 15, and are believed to be allowable for at least the above-identified reasons.

**2. Whether claims 10, 11 and 19 should be rejected under 35 USC 103(a) as being unpatentable over the above rejection applied to claims 1 and 15, respectively above [under 35 USC 102(b) as being anticipated by Ishikawa] and further in view of Dove et al. (U.S. Patent No. 6,457,979; hereinafter "Dove").**


Applicants assert that Dove does not teach that which applicants have already argued is missing from Ishikawa. As a result, claims 10, 11 and 19 are allowable at least for the reason that claims 10 and 11 depend from claim 1, which is believed to be allowable over Ishikawa for the reasons presented in Item 1 above. Claim 16 is allowable at least for the reason that claim 16 depends from claim 15, which is believed to be allowable over Ishikawa for the reasons presented in Item 1 above.

### **3. Conclusion**

In summary, the art of record does not teach nor suggest the subject matter of Appellants' claims 1-3, 5, 7, 10-12, 15, 16, 18 and 19. These claims are therefore believed to be allowable.

Respectfully submitted,  
Holland & Hart LLP

Date: December 15, 2006

  
By: \_\_\_\_\_

James A. Sheridan  
Reg. No. 43,114  
Tel: (303) 295-8000



## Claims Appendix

Claim 1: Apparatus, comprising:

- a) a layer of dielectric;
- b) a plurality of conductors;
- c) a plurality of dielectric mounds, wherein each of the conductors is encapsulated between the layer of dielectric and a corresponding one of the dielectric mounds; and
- d) a first ground shield positioned below the layer of dielectric, and a second ground shield positioned above the dielectric mounds.

Claim 2: The apparatus of claim 1, wherein the second ground shield is deposited on the dielectric mounds.

Claim 3: The apparatus of claim 2, further comprising a plurality of conductive vias in the layer of dielectric; the conductive vias coupling the first and second ground shields at points about the plurality of conductors.

Claim 5: The apparatus of claim 2, further comprising a plurality of ground traces deposited on the layer of dielectric; the ground traces providing a means for coupling the second ground shield to the conductive vias.

Claim 7: The apparatus of claim 1, wherein at least some of the dielectric mounds are substantially adjacent one another.

Claim 10: The apparatus of claim 1, wherein the layer of dielectric and dielectric mounds are KQ CL-90-7858 dielectrics.

Claim 11: The apparatus of claim 1, wherein the layer of dielectric and the dielectric mounds are thickfilm dielectrics.

Claim 12: The apparatus of claim 1, further comprising a substrate; the first ground shield being deposited on the substrate, and the layer of dielectric being deposited on the first ground shield.

Claim 15: A method for forming transmission lines, comprising:

- a) depositing a plurality of conductors on a layer of dielectric that is positioned above a first ground shield;
- b) depositing a respective mound of dielectric over each conductor; and
- c) depositing a second ground shield over the mounds of dielectric.

Claim 16: The method of claim 15, further comprising, prior to depositing the mounds of dielectric, forming a plurality of conductive vias in the layer of dielectric, at points about the plurality of conductors; the conductive vias contacting the first ground shield; wherein the mounds of dielectric and second ground shield are deposited to ensure contact between the second ground shield and conductive vias.

Claim 18: The method of claim 16, further comprising, prior to depositing the mounds of dielectric, depositing a plurality of ground traces on the layer of dielectric; the ground traces contacting the conductive vias.

Claim 19: The method of claim 15, wherein the layer of dielectric and the respective mounds of dielectric are KQ CL-90-7858 dielectrics.

## **Evidence Appendix**

No extrinsic evidence was relied upon to support the arguments herein.

### **Related Proceedings Appendix**

Appellants are unaware of any Board or court proceedings related to this Application.